

What is claimed is:

1. An automotive internal combustion engine control system that transmits an output of a starting motor through an endless transmission belt to an input/output pulley mounted on an output shaft of an internal combustion engine in starting the internal combustion engine, transmits an output of the internal combustion engine through the endless transmission belt to auxiliary machinery while the internal combustion engine is in operation, and transmits an output of the starting motor through the endless transmission belt to the auxiliary machinery while the internal combustion engine is at an intentional standstill;

wherein said starting motor has a power generating function; and

said automotive internal combustion engine control system includes a speed-change mechanism which transmits rotation of the starting motor to the internal combustion engine at a high first gear ratio in starting the internal combustion engine and which transmits rotation of the internal combustion engine to the starting motor at a low second gear ratio to operate the starting motor as a power generator while the internal combustion engine is in operation, said speed-change mechanism being built within the input/output pulley of the internal combustion engine.

2. The automotive internal combustion engine control

system according to claim 1, wherein the speed-change mechanism is disposed so as to overlap the input/output pulley at least partially with respect to an axial direction in which the output shaft of the internal combustion engine extends.

3. The automotive internal combustion engine control system according to claim 1, wherein the input/output pulley defines an interior space opening in a direction opposite a direction toward the internal combustion engine, and the speed-change mechanism is received in the space.

4. The automotive internal combustion engine control system according to claim 1, wherein the speed-change mechanism includes:

a planetary gear including mutually meshed gears serving as a sun gear, planet pinions and a ring gear, and a carrier supporting the planet pinions for rotation, said meshed gears being helical gears;

a one-way clutch interposed between a stationary part and the sun gear; and

a centrifugal clutch that engages the carrier and the ring gear by the agency of centrifugal force of a predetermined level or above, and that is disengaged by thrust produced by the helical gears.

5. The automotive internal combustion engine control system according to claim 4, wherein a sleeve is put on the output shaft of the internal combustion engine, a cylindrical

sun gear member with the sun gear is put on the sleeve, the input/output pulley has an inner cylindrical part mounted on the output shaft of the internal combustion engine and an outer cylindrical part formed integrally with the inner cylindrical part so as to surround the latter, and the inner cylindrical part surrounds the sun gear member.

6. The automotive internal combustion engine control system according to claim 5, wherein the outer cylindrical part extends in a direction opposite a direction toward the internal combustion engine such that the outer cylindrical part and the sun gear member define an annular space.

7. The automotive internal combustion engine control system according to claim 5, wherein an inside surface of the sleeve is interlocked with the carrier for torque transmission.

8. The automotive internal combustion engine control system according to claim 6, wherein the planet pinions (43), the ring gear and the centrifugal clutch are received in the annular space.

9. The automotive internal combustion engine control system according to claim 1, wherein the speed-change mechanism comprises:

a planetary gear including mutually meshed gears serving as a sun gear, planet pinions and a ring gear, and a carrier supporting the planet pinions, said mutually meshed gears being helical gears;

the carrier being fastened to an output shaft of the internal combustion engine, the ring gear being connected to the input/output pulley, the sun gear being interlocked with a stationary member by a one-way clutch; and

a centrifugal clutch that engages the carrier and the ring gear by the agency of centrifugal force that acts on weights, and that is disengaged by thrust produced by the helical gears.

10. The automotive internal combustion engine control system according to claim 1, wherein an oil chamber for containing lubricating oil is formed inside the input/output pulley.

11. The automotive internal combustion engine control system according to claim 10, wherein the input/output pulley has an inner cylindrical part mounted on an output shaft of the internal combustion engine, an outer cylindrical part surrounding the inner cylindrical part and a flat, annular part connecting the inner and the outer cylindrical part, and the oil chamber is defined by a cover covering an annular space defined by the input/output pulley, the inner cylindrical part, the outer cylindrical part and the flat, annular part.